The Role of EMS in the Stroke System of Care in Washington State

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Objectives

- Introduce Washington's new emergency cardiac & stroke system
- Review new standard EMS stroke protocol guidelines for BLS and ALS field providers
- Review EMS stroke triage tools
- Describe use of FAST assessment for possible stroke patients
- Apply triage destination tools
- Review use of quality improvement measures to evaluate system performance

Emergency Cardiac & Stroke System

- Why do we need a system?
  What are the components?
  How will it work in Washington?

Why Do We Need A System?

Systems minimize delays in the chain of survival

Deliver the **right** patient,
to the **right** place,
in the **right** amount of time.

Why Do We Need A System?

- Need to increase probability that eligible stroke patients will receive definitive care
- Time is brain!
- Between 10-20% of stroke patients are eligible for definitive treatment:
  - 2006-08 CHARS hospital data—only 3.5% of stroke patients received TPA in Washington

Stroke
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American Stroke Association℠
A Division of American Heart Association

Recommendations for the Establishment of Stroke Systems of Care: Recommendations From the American Stroke Association's Task Force on the Development of Stroke Systems

Task Force Members, Lee H. Schwamm, Arthur Pancioli, Joe E. Acker, III, Larry B. Goldstein, Richard D. Zorowitz, Timothy J. Shephard, Peter Moyer, Mark Gorman, S. Claiborne Johnston, Pamela W. Duncan, Phil Gorelick, Jeffery Frank, Steven K. Stranne, Renee Smith, William Federspiel, Katie B. Horton, Ellen Magnis and Robert J. Adams

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Systems of Care Work!

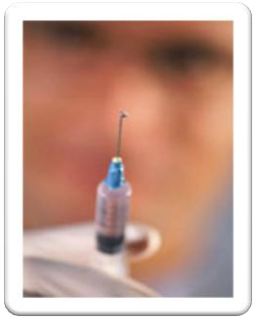
- National momentum
  - American Heart/American Stroke Association
  - American College of Cardiology
  - Centers for Disease Control
  - Society for Chest Pain Centers
  - CMS
- Examples
  - North Carolina RACE
  - Los Angeles
  - Minnesota Cardiac Level 1
  - Phoenix Stroke Matrix

System Components

911

Dispatch

Neurology / Cardiology

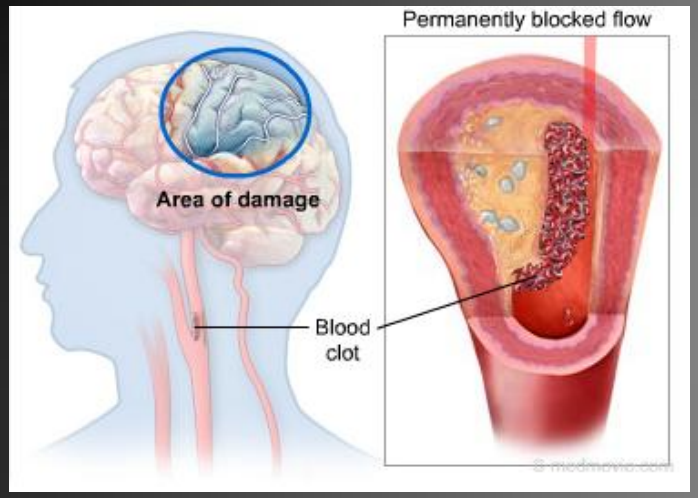


Every Second Counts!

Washington State's Approach

Emergency Cardiac & Stroke Technical Advisory Committee (TAC) provides direction on:

- Public education
- Recommended dispatch guidelines
- Standardized EMS protocol guidelines
- Standardized EMS triage tool
- Voluntary hospital categorization
- Quality improvement & data collection



Acute Stroke

- Pre-hospital protocol guidelines
  Triage tool
  Hospital levels

Standard EMS Protocols for Assessment & Treatment of Possible Stroke Patients

1. Primary Survey

a. Support ABCs
b. Check blood glucose, temperature, SpO2 (if possible)
c. Treat hypoglycemia (if possible)
d. NPO

Standard EMS Protocols (cont.)

2. Secondary Survey

a. Perform FAST Assessment
(**Face/Arms/Speech/Time last normal)**

- If one component is abnormal, high probability of stroke
- Refer to stroke destination triage tool
- Time from last normal will determine destination

b. Limit scene time with goal of ≤ 15 minutes

Standard EMS Protocols (cont.)

3. Transport

a. Early hospital notification – specify FAST findings (issue stroke alert & share abnormal physical findings and time last normal)

b. Transport according to WA State Stroke Triage Tool and regional patient care procedures

c. If closest appropriate facility is greater than 30 minutes distant, consider air transport when appropriate

Standard EMS Protocols (cont.)

4. Management & Ongoing Assessment En Route

a. Lay pt. flat unless signs of airway compromise, in which case elevate no higher than 20 degrees

b. IV access (as able)

- Ideally, 16 or 18 ga IV in unaffected arm (affected arm is acceptable)
- Normal saline (avoid glucose-containing and hypotonic solutions)
- Optional: Blood draw with IV start

c. 2nd exam/neuro reassessment

d. Optional: initiate tPA checklist

Stroke Triage Tool

Assess Applicability for Triage

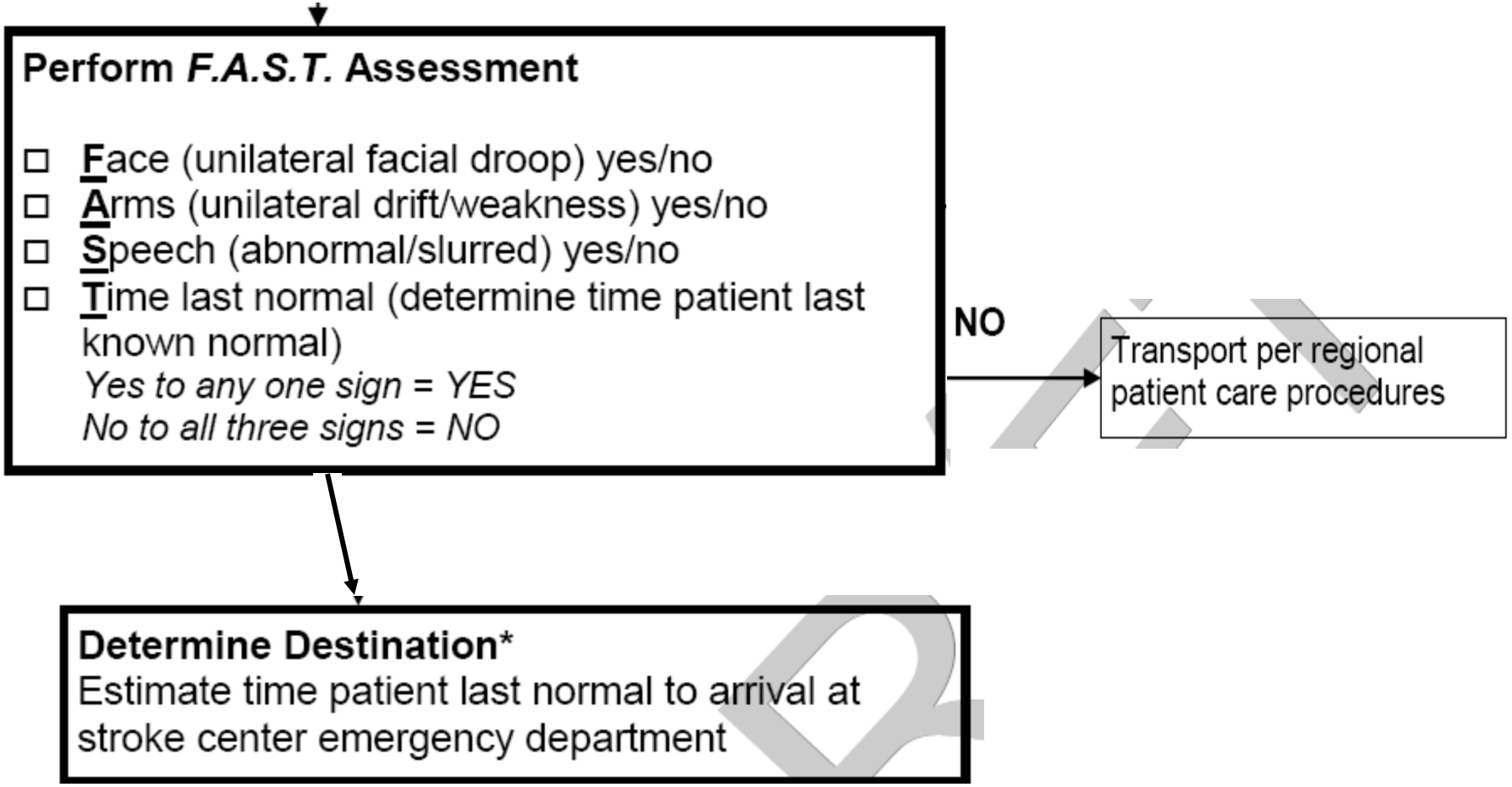
Report from patient or bystander of one or more **sudden**:

- ☐ Numbness or weakness of the face, arm or leg, especially on one side of the body
- ☐ Confusion, trouble speaking or understanding
- ☐ Trouble seeing in one or both eyes
- ☐ Trouble walking, dizziness, loss of balance or coordination
- ☐ Severe headache with no known cause

Yes?

NO → Transport per regional patient care procedures

Stroke Triage Tool



FAST Assessment

Test	Normal	Abnormal
Facial droop: Ask the patient to show his or her teeth. Watch closely to observe that both sides of the face move equally.	Both sides of the face move equally	One side of the face does not move as well as the other

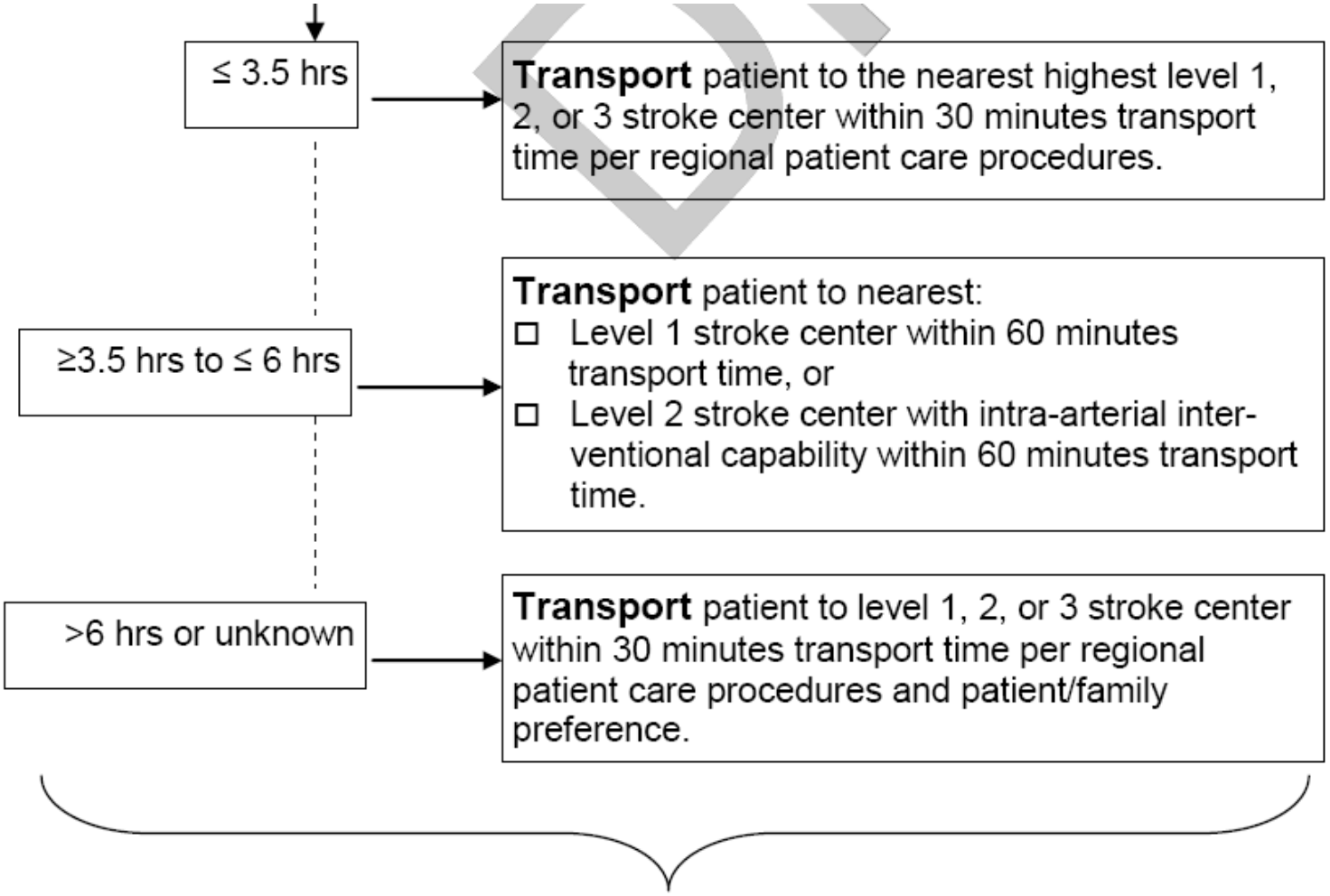
FAST Assessment

Test	Normal	Abnormal
Arm drift: Ask the patient to close his or her eyes and extends both arms straight out for 10 seconds. The palms should be up, thumbs pointing out.	Both arms move the same or both arms do not move at all	One arm drifts down compared to the other or one arm does not move

FAST Assessment

Test	Normal	Abnormal
Speech: Ask the patient to repeat a simple phrase such as "Firefighters are my friends."	The patient says correct words with no slurring of words	The patient slurs words, says the wrong words, or is unable to speak
Time: Ask the patient, family or bystanders the last time the patient was seen normal.		

Destination if YES on F, A or S



"Possible stroke w/ x symptoms"

Important Considerations

**If unable to manage airway, consider rendezvous with ALS or intermediate stop at nearest facility capable of definitive airway management.*

If a stroke center is not available within transport times by ground, consider air transport or contact medical control for destination decision.

Report possible tPA contraindications to ED:

- Symptom onset greater than 180 minutes
- Head trauma or seizure at onset
- Recent surgery, hemorrhage, or AMI
- Any history of intracranial hemorrhage
- Minor or resolving stroke
- Sustained BP> 185/110 (do not treat!)

Hospital Levels—Stroke Center

- **Level 1-Comprehensive Stroke Center**
  - Certified Primary Stroke Center that also has:
    - Neurologist w/in 20 minutes 24/7
    - Neurosurgeon w/in 30 minutes 24/7
    - Vascular neurologist and vascular surgeon
    - Other highly specialized stroke care capabilities
- **Level 2- Primary Stroke Center**
  - Has the necessary staffing, infrastructure, and programs to stabilize and treat most acute stroke patients.
  - Some may also have capability to do more advanced intra-arterial therapies (i.e. IA t-PA)
- **Level 3-Acute Stroke Center**
  - Have the infrastructure and capability to care for acute stroke, including administration of IV t-PA
  - Most stroke patients would be transferred to a Level 1 or 2 center post-treatment

Working Stroke Systems

- Data collection
- Quality improvement
- Resources & tools

Data and Quality Management

ECS TAC Report:

Develop a comprehensive data system to demonstrate the effectiveness of the ECS system and improve performance. Include dispatch, EMS and hospitals, and use existing data systems (WEMSIS!) to avoid duplicate data entry & analysis.

EMS/T Strategic Plan:

Goal 19, Objective 5: Local Quality Improvement
By June 2012 regional cardiac and stroke systems evaluate system performance through a quality improvement process.

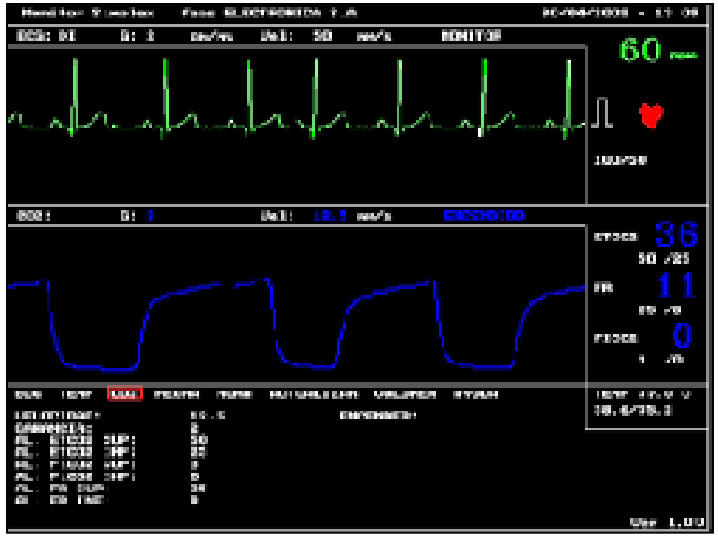
- Develop QI Forums at county and regional levels

Key System Measures

- Time from onset of patient signs & symptoms to 911 call
- Time spent on-scene for EMS (<15 mins?)
- Time from first medical contact (EMS or first ED) to treatment (i.e. IV or IA t-PA, devices)
- Time from onset to treatment (IV or IA t-PA, devices)

Key System Measures (cont.)

- Percentage of stroke patients that arrive by EMS
- Percentage of stroke patients EMS notified hospital pre-arrival
- Accuracy of EMS “stroke alerts”



EMS Data Elements

- Time of symptom onset
- PSAP call receipt
- Time units dispatched
- Time EMS arrived at patient's side
- Time EMS left scene with patient
- Time EMS unit arrived at hospital
- FAST, ECG or other clinical findings
- (Resuscitation efforts and outcomes)
- Medications administered

EMS Patient Reports and QI Process

- EMS patient reports are critical for receiving hospital system evaluation and QI processes

Quality Improvement

- Dispatch, pre-hospital and hospital partners should work together to set goals and ensure they are being met
- Washington's law allows cardiac and stroke cases to be discussed in the regional EMS/Trauma QI forums

Conclusion—EMS Challenges

- Need to develop effective public education programs about stroke
  - Do CPR & heart attack programs serve as model?
  - REACT study & other programs
  - Sustained multi-faceted programs
  - Focus on high-risk patients?
- Need to involve and train 911 dispatchers
- Need to focus EMS provider education on FAST assessment—***time last normal?***

Conclusion—EMS Challenges

- Need better communication pathways with hospitals
  - EMS call-based communications ("strokealerts")
  - Meetings on admin issues—QI issues & results
- Critical need for feedback from stroke centers to EMS providers
  - ASA guidelines—feedback on 100% of cases
- Need to evaluate system of care & outcomes
  - Evaluating EMS accuracy at identifying stroke pts.
  - Initial "overtriage" rates of 30% desirable

Questions and Discussion

Questions

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